

211

Arts & Mécanique

NOTICE

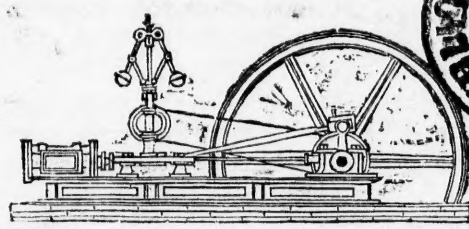
ON THE

**QUEBEC STEAM MECHANICAL  
BAKERY.**



TOURANGEAU'S MECHANICAL KNEADING TROUGH  
AND  
HOT AIR OVEN.

Bread put into the oven without putting the hand to it in less than a minute.



The Letters Patent are dated 2nd May, 1859.

QUEBEC :  
PRINTED BY AUG. COTÉ & Co.  
—  
1859.

Q

the  
sub  
of  
hov  
to  
son  
me

T  
end  
the  
hav  
rag  
suc

A  
by  
kne  
pres  
hot

It  
also  
the

## NOTICE

ON THE

### QUEBEC STEAM MECHANICAL BEKERY.

---

Of all the different departments of industry that which has for its object the perfection of the human race in such improvements and its means of subsistence, ought to be the most entitled to public approbation,

The arts which place in the hands of many objects of luxury or even of simple amusement should, it is true, be conveniently appreciated, however in the eyes of a discerning public they should not be compared to that which can provide all classes of society with cheap and wholesome food and especially good bread which is the basis of all nourishment.

Thus in Europe, especially in England and in France those who have endeavoured to substitute a more ameliorated system of making bread to the old system, transmitted from age to age, with all its imperfections, have received from government and the public in general every encouragement, and in a very short time their labour has been crowned with success and amply remunerated.

At present in all populous cities and towns, kneading troughs wrought by the hand have disappeared and have been replaced by mechanical kneading troughs, and ovens, which in former times and even to the present day were heated by fuel in the inside, have been replaced by hot air ovens.

It is only after an examination and a careful study of ten years, and also after having compared the different methods now in operation, that the inventor has received from the government of this province, two

letters patent dated 2nd. May last, one of which is for a mechanical kneading trough and the other for a hot air oven which will enable him to carry on the bread baking business on a large scale, in this city, by means of his apparatus, every trial of which has been attended with most favorable results.

In the mean time the inventor thinks it his duty to give the public a short description of his mechanical kneading trough and likewise of his hot air oven, so that they may at once judge of the excellency and superiority of the one and the other over the ordinary manner of kneading dough and the present ovens.

The Tourangeau kneading trough is composed of a wooden cylinder, strongly bound with iron, having a longitudinal opening or door, that can, when required, be taken away or replaced, by means of bolts. Both extremities of the cylinder are moveable, being placed upon an axis, supported on each side of the cylinder by wood work. This axis is put in motion by means of indented wheels of different sizes, in the centre of the smallest of which is a crank or a driving wheel, which can be put in motion either by the hand, by steam or any other power.

In the interior of the cylinder, the extremities of the axis has a quadrilateral apparatus attached to it, the longitudinal sides of which have iron teeth placed at intervals.

To make use of the Tourangeau kneading machine it is necessary that having put the required quantity of ferment, likewise the flour and water in proportion to the quantity required we should replace and bolt the door of the through, turn the axis and likewise the internal apparatus by means of the crank or driving wheel. A lever bound to a plate of sheet iron serves in the beginning of the operation, by means of the pressure placed on it, to regulate the movement of the cylinder, while the interior of the apparatus kneads the dough by constantly turning.

As soon as the gradual absorption of the water has rendered the dough too heavy then the action of the lever is discontinued and the cylinder turns with the internal apparatus.

The dough, having undergone this operation during fifteen minutes, is kneaded and ready for use. The cylinder is then moved so as to bring the opening exactly above a trough of a proportionate size, the internal apparatus is then moved by which operation the dough falls into the trough. During this operation the cylinder must be kept immoveable.

The internal surface of the long sides of the internal apparatus is supplied with scrapers which take off all the dough which may adhere to the sides of the cylinder after which operation it is perfectly clean. The

trough into which the dough has fallen is then removed, it being placed on wheels to facilitate its movement. It is then covered over with a frame work which allows the dough to rise, and which at the same time prevents it from running over. As soon as the dough has thus fermented it is ready to be made into loaves.

By means of this kneading machine a saving of time and labour over the ordinary method is obtained in proportion of 10 to 1, without making any reference whatever to the advantage it offers with regard to cleanliness, and of the perfect kneading of the dough in all its parts.

There are no kneading machines in this province and moreover the present one is on a more improved scale than those in use in England and in France.

Besides, this construction is a particular invention that differs essentially, from all other known kneading machines. The result of the use of this manner of kneading is to allow bread, well made and of well kneaded dough, to be sold at a moderate price.

In Tourangeau's hot air oven there are two things to be considered, viz : the manner of heating and its application.

At the base of the centre of the apparatus is the furnace. The air that enters by the furnace, heats an iron plate of great thickness under which the hot air is conveyed, it then enters two flues, through which it is conveyed by two lateral openings to the covering, which is also made of iron and which forms the crown of the oven. The two openings at either side, through which the heat passes, also allows the smoke to pass to the chimney the draught of which is regulated by means of a valve serving as a regulator and which can be elevated or depressed by means of a lever. By these means the superior convex surface of the oven is heated to the same degree as the lateral walls and the hearth or interior surface of the oven, which is made of thick iron leans on brick work, built on the stone foundation, covered as before mentioned with thick iron plates and which immediately covers the oven, likewise the double inferior flues.

The interposition of bricks thus placed between the iron plate that covers the furnace and the inferior surface of the oven which is also lined with iron, gives a gradual heat which lasts for a length of time sufficient to bake the bread.

Four lateral openings serve to facilitate the clearing of the flues which convey the smoke from the furnace. In the centre, towards the upper part of the oven, is an opening by which the steam arising from the baked bread makes its escape.

A groove placed at this opening gives room for a pyrometer that indicates the heat of the oven in degrees. Two moveable doors allow a wire cart, or an iron one, to be introduced, on which the bread is placed before being put into the oven. By means of this oven a batch of bread only takes three quarters of an hour to bake, and as it can be constantly retained at the same convenient degree of heat, and as there is no delay whatever in cleaning or washing it, it can be used uninterruptedly, making allowance nevertheless for the time employed in putting in and taking out a batch, and each of those operations will not take much more than a minute, and moreover the wood has not to be split and a great saving will be had in this article as it will not take the quarter of the quantity of wood and even less than that of an ordinary oven.

Let us consider all the advantages of Tourangeau's letters patent and also let us cast a glance at the interior of an ordinary bakery. Tourangeau's mechanical kneading trough, besides making better bread than any other mechanical kneading trough, has moreover the advantage of making the dough firmer, good even for biscuit, and moreover the dough is taken out and the sides of the trough is cleaned by means of its own mechanical movement, which circumstance, causes great delay and trouble in all the first newly invented mechanical kneading troughs, and for which cause many bakers object to use them. Hence no more waste of flour, and the dough is so well wrought, and it has risen so well, that bread made from it seemed as fresh at the end of seventeen days as at the end of three. No longer will the perspiration be seen running off the baker's brow by over exertion, work so unbecoming, that he who works the dough has received a particular name, derived from the sound caused by the excess of fatigue.

The dough will be made independantly of the baker's strength and we will no longer have to fear their negligence or business. The mixture of flour and water will be complete, it will be all the better baked and it will give a healthier and better bread. One kneading trough alone can make a hundred barrels of flour into dough in twelve hours.

Tourangeau's hot air oven can be heated by all sorts of fuel. There is an equal degree of heat everywhere and the bread cannot miss but to be always equally and well baked, there being a pyrometer to indicate the heat in the interior of the furnace, and as the fire is always kept up during the time the bread is baking it is evident that the same degree of temperature can be kept in the oven. Bread takes two third less time to be baked in this oven, than in an ordinary one.

The putting in and the taking out of the bread being done by means of machinery all the loaves are perfectly alike and placed in the same

ord  
be  
tak  
two  
the  
enp  
to a  
als  
gen  
wat  
ma  
T  
fol  
F.  
the  
imp  
tha  
of  
for  
the  
san  
lea  
and  
spi  
tur  
wit  
gre  
the  
the  
vol  
bo  
and  
Th  
ove  
dra  
to v  
wa  
sm  
look  
gre



order, without any apparance of dust, ashes, coals, &c. that is often to be seen on the enternal parts of other loaves. As soon as one bath is taken out, another is put in. Thus in the same oven, in the space of twelve hours, we can bake twelve batches. As there is no loss of heat the doors being kept constantly closed, the baker has no longer cause to enpose his face hands and body to the scorching heat of a blazing fire, or to a current of air, at a temperature from 280° to 320°. This invention also makes away with those filthy rags tied to a long pole, which are generally steeped in a sort of tub or bucket which contains stagnant water, to clean the oven, but which instead of cleaning, soils it, which may be seen by examining a loaf taken out of such an oven.

To give a correct idea of an ordinary bakery, we have but to cite the following words pronounced by the immortal and ever to be remembered, F. Arago at the academy.

“ We would never believe, were we not ourselves eye witnesses that the first, and at the same time, the oldest of all the arts and the most important, is the very one that is the least advanced, we should add that it is also the least cultivated. Enter into the most boasted bakeries of the capital, follow in all its details the material operation of transforming flour into bread, it will sorely grieve you to see that although the same thing has been repeated day after day these four our five thousand years, there is absolutely no progress whatever made, you will leave the bakery quite dejected, your mind agitated, your heart troubled, and I might add at the same time that that painful work has perhaps inspired you with disgust. Kneading dough even in the nineteenth century is cruel work. A mass of tough paste has to be strongly pressed with clenched hands, then taken in the baker's sinewy arms, lifted with great strength and thrown back again five or six times. No wonder therefore that the baker, who has such heavy work to do, has received the name of groaner because he betrays his suffering and fatigue by involuntary and low sighs. The perspiration soon runs from his whole body and the sweat in large drops falls into the dough that he is kneading and he is quite overcome with fatigue when his inhuman work is done. The baking of the bread is still now dreadful, the wood is heaped in the oven and set on fire, it is reduced to coals and ashes, that are afterwards drawn red to hot the mouth of the oven. Then with filthy rags they seem to wash and dry the bottom of the oven, and while it is still dirty and warm they begin to put in the batch ; the baker places the dough on a small board to which is attached a long handle (peal) then he has to look into the back part of the oven, the top and bottom part of which are greatly heated and is in danger of scorching his eyes, he looks where he

can please it without being sufficiently able to keep it from touching the other loaves. What work and trouble? And after all let us examine what is taken out of the oven, a loaf besmeared with ashes, covered with pieces of coal &c., &c. Should we then be in the least surprised that journeymen bakers are decimated each and every year by consumption, peripneumony, diseases of the chest, pleurisy &c., &c., &c? Should we then be surprised that the most unhealthy trade should also be the most immoral, and that the unhappy bakers seek in licentiousness or arunkeness a sad remuneration or refuge for fatigues endured above human strength.

"That is not all. If at least, bread bought at so dear a rate, notwithstanding the dirt that enters into its composition and which spoils its appearance, were bread of good quality, always the same, we would not have so much reason to complain! but unhappily such is not the case."

After those true and judicious observations of the illustrious Arago, we will add the following extracts, so as to expose in a clearer manner the idea that all sensible and learned people have of that terrible system of our bakeries.

The following is an extract from the *Courrier de Lyon* :

"After speaking on the subject of the fine arts let us say a few words on the baking system, it is not a nice once, but it has the merit of procuring food for every one. If, besides, we call it an art, it is through perfect politeness and to comply with custom; in reality, it is only a barbarous routine unworthy of a civilisation that has invented so many industrial wonders, so as to satisfy wants less imperious and far less essential than that of good food. Thus we have decomposed all the old elements, water, fire, air and earth, alleviated if not perfectly annulled pain by chloroform, shortened the distance and annihilated time by electricity, mountains in the moon have been measured, imperceptible stars discovered, light analysed, electricity drawn from the heavens, also table turning; rivers and seas are covered with ships of prodigious size and dimensions, that brave tempests and storms; we have also invented and brought under subjection steam engines that can bear a rolling city through precipices, and through the centre of mountains with the rapidity of winged horse; in a word, science has almost made Titans or demi-gods of us, and it has not been able to procure us bread worthy of man, because can we thus qualify that filthy bread kneaded with the baker's sweat? God only condemned the children of Adam to eat their bread at the sewal of their brow, and it was enough, without adding thereto, during these three or four thousand years the sweat also of the bakers."

Th  
"I  
mark  
part  
those  
seal  
sight  
woul  
all th  
tedly  
"I  
simi  
and a  
work  
happ  
hurri  
caus  
work  
may  
bake  
are o  
nigh  
or ra  
with  
of li  
wish  
wer  
unfo  
of tr  
mos  
dail  
at th  
free  
mis  
inte  
stud  
eler  
the  
crow  
whi  
tite  
by



The following is an extract from the journal, *le Siècle* :

" Readers, if we were to say that you took to your lips things bearing marks of filth, that you were putting in your mouth a composition partly imbibed with animal emanations now or less unwholesome of those unhappy extenuated men by fatigue, whose wan features and the seal of uncleanness, not often to be met with, are disgusting to the sight, a production impregnated with their breath and fetid sweat, you would, most probably, cast far from you such a thing, notwithstanding all the benefit you would derive from it, and you would, most undoubtedly try and find out a more acceptable one to substitute in its place.

" If we were to add that the power of preserving this article that you assimilate each and every day to your own substance, is, in the actual old and stationary industry to which it belongs, a most laborious and painful work, ruining the health, a killing work, that enacts from these unhappy men who are obliged to do it, the sacrifice of their night's rest, hurrying them to an untimely grave, scorching their eyes and often the cause of their losing their sight, if not perhaps the cause of their death, work that cannot be accomplished without great trouble of which you may easily judge by the low moaning sounds that escape from the bake, lamentable groans, which, although voluntary to a certain extent are of such a character that, were they to strike our ears unawares at night, in some lonely place, they would bear to our minds the conviction or rather thought that it was the moaning of a man who is foully dealt with, or of one who is being choked ; or the idea of those hard struggles of life against death, or of a patient in the last agony of one who, still wishing to prolong life, breathes, at last, his vital spark. Readers, were we to speak to you in such a language, which would only be the unfolded reproduction of Mr. Thenard's observations, and the expression of truth as relating to the actual state and production of the first and most indispensable article of our food, that is to say bread, which is our daily subsistence, and that, if at the same time, we were to offer you, at the same price, and as conveniently the same nutritious substance, free from all those impurities, from all those aversions, and from all those miseries, bread perfectly pure, well tasted, light, wherein art has only intervened in order to ameliorate, to afford to this production, after great study, experience and knowledge all the primitive good qualities of the elements with which it is composed ; if, were we to say that such were the good tidings that we bring to you that our undertaking has been crowned with success, and so much so as to banish from your minds, while at your meals all reluctant thoughts, and give you a good appetite, you would, most undoubtedly hasten, with all possible zeal, and by so doing only obey your good reason, to welcome such kindness, and

would not your only thoughts be to thank the inventor of such an industrious undertaking, and likewise the persevering efforts of those who, for every one's good, had brought this invention to such perfection."

The Quebec steam bakery is situated in St. Joseph street, St. Roch's. It is a building 34 feet in front, by 84 feet in depth, forming three stories on the side facing the street and four in the rear. In the front part besides the apartments occupied by the family, is a splendid shop well finished and likewise an office. In the first story, situated in the rear part of the building, is the bakery, which apartment occupies a space of 30 feet by 58: this apartment contains three hot air ovens, one which is completed, likewise two mechanical kneading troughs, four secondary kneading troughs, a machine for washing potatoes, a magnificent engine, two cylinders, which together with a machine made in Boston, are used in making such bread as is usually called bread biscuit, at present so much used in New-York; likewise hand carts, metal tables, large boxes, and all the machinery attached to an extensive steam bakery.

On the second story is the biscuit bakery, in an apartment 30 feet by 48, containing three ordinary ovens, a breaker, cylinders and a machine with eight different forms for making biscuit, the whole being purchased in one of the first class manufactories of Boston.

The third story is used for the flour where it is put in large boxes in order to keep it dry before it is used either to be made into bread or biscuit. It is there that the gluten and starch are separated from the dough, as to make macaroni and vermicelli with the one, whilst the other is used in making fancy bread. The fourth story is used for drying the biscuit before being put into bags. At the side of the bakery is a yard 84 feet by 46, with a two story hangar of 112 feet and a stable. In the rear is the wood yard 40 feet by 96 with a shed 18 feet by 63.

The hot air oven which is completed, likewise the mechanical kneading trough have been in operation these six weeks and have given every possible satisfaction. It would take a hundred pounds to finish off the other oven and likewise to complete the bakery, which could be completed and in operation in three weeks.

After having, in the preceding lines pointed out all the advantages which the community at large would derive, with regard to hygiene and economy, from the use of mechanical kneading troughs and hot air ovens, there still remains a project to be made known in order to put those improvements into practice. Every one should understand and know, that in order to bring the baking business to such perfection, he who undertook to carry on this work and to give to the country such improvements, had not only to devote all his time and the energy of his intelligence, but had likewise to expend a considerable amount of money, at first, in

fruitless attempts, in useless trials and in so doing expended a great deal of his capital that formed his fortune. That fortune that could have given him an independant livelihood, exempt from all cares and troubles, nevertheless he courageously sacrificed it for a speculative idea, in order to bring to perfection a useful work, to make journeymen labourers' work less tiresome and to give to his fellow citizens a healthy article of food, of good quality, clean, and at a low rate, possessing, at the same time, all the necessary conditions as to its being well received. Thus in the position in which the inventor is now placed after all the sacrifices he has made in accomplishing his generous work, the public cannot, in the least, expect that such perfection in the bread baking business can be put in practice, by the means and personal resources of the inventor, but the public should understand that they should now take the affair in hands, do all in their power to gain advantage of this work, especially as it affords them great profit.

It was already been spoken of this long time back to erect in Quebec extensive bakeries, but all efforts with regard to this contemplated project must have proved in vain, because they were not founded on condition that infallibly guarantee success, which conditions are now offered by means of the perfection to which this work is now carried on, and the low rate at which those improvements allow bread to be sold at.

The most realizing means that we know of to put this work in practice would be to form a company in which one would advance the money and the other his time and attention, the plan of which will be given on a separate sheet. The profits accruing from such an undertaking can be easily seen where we know that the perfection to which the kneading trough is brought, as likewise that of the oven, will allow, at the same expense, three times as much bread to be made as in an ordinary bakery and moreover will produce bread of such a quality and of such perfect cleanliness that no other bread can be made to compare to it.

We have explained but very imperfectly all the advantages offered by the perfect manner in which these things are carried on and of which we have already spoken. We have showed all the sacrifices that have already been made in order to offer to the inhabitant of Quebec such a useful establishment, and we will at once give them the means of making good use of them.

We hope that this appeal to the good sense and enterprising spirit of the citizens will not be in vain and that in a short time we will have the pleasure of seeing this bakery, on which have been spent so much time, labour and money, receive from the public all the necessary encouragement, that such a fine and newly invented steam bakery in Quebec, is entitled to.